DOCUMENT RESUME

ED 057 941 RC 005 803

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TITLE An Inventory of Natural, Human, and Social Overhead Capital Resources in North-Central New Mexico.
INSTITUTION New Mexico State Univ., Las Cruces. Agricultural Experiment Station.
SPONS AGENCY Department of Agriculture, Washington, D.C.
REPORT NO AESR-184
PUB DATE Feb 71
NOTE 27p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS American Indians; Anglo Americans; *Area Studies; *Demography; Economic Factors; Education; Environmental Influences; *Human Resources; *Land Use; Mexican Americans; *Natural Resources; Programs; Rural Urban Differences; Services; Surveys
IDENTIFIERS New Mexico

ABSTRACT

Concerned with the north-central area of New Mexico (Rio Arriba, Taos, Colfax, Mora, Santa Fe, and San Miguel counties), this inventory describes the situation and delineation of the region, the natural resources (physical characteristics, land, land-ownership patterns, land-use patterns, land-title problems, water resources, and minerals); human resources (regional demography, ethnic groups, education, income distribution and unemployment, and occupational profiles); and social overhead capital (educational services, health services, other public services, communications, and recreation). Each of the foregoing is discussed in terms of relevance to the state and its people and possible ramifications in view of influences from within and without New Mexico. Included are 8 figures, 17 tables, and 22 references. (MJB)

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AN INVENTORY OF NATURAL, HUMAN, AND SOCIAL OVERHEAD CAPITAL RESOURCES IN NORTH-CENTRAL NEW MEXICO

RC005803

NEW MEXICO STATE UNIVERSITY

AGRICULTURAL EXPERIMENT STATION RESEARCH REPORT 184

1

Summary

The past several decades have seen major changes taking place in rural America and in the agricultural sector of the economy. North-central New Mexico has most of the problems common elsewhere plus a few unique to it.

Farms are so small that it is not simply a question of a man buying his neighbor's farm or half of it to make his total operation commercially viable, as is being done in some other agricultural areas. In this region, it is a question of consolidating several small tracts for which no legal title may be available.

Low levels of education, low incomes, high unemployment and underemployment rates, and a high incidence of welfare payments are evident in the rural counties of the region. Men are leaving the region to seek urban occupations. Those with low educational attainments are ill-prepared to enter the labor market.

The regional population grew in the sixties and reflected the familiar rural to urban migration pattern. From the occupational profile, it is apparent that government has provided the bulk of the new jobs in the area. These were in the federal installation in Los Alamos and in the state capitol in Santa Fe, where most of the population growth occurred.

The region is one of the few areas in the state in which water, if properly managed, should not significantly limit development, at least in the foreseeable future. There are substantial mineral deposits whose exploitation depends primarily on supply and demand in the national and international markets. These mineral resources have the potential for a significant economic stimulus.

Educational systems are generally funded at a higher rate per pupil than the state average. The student-teacher ratio is the same as for the state. This seems to indicate that there has been an upgrading of the region's schools in recent times when compared to the adult population's level of educational attainment. Medical services are somewhat below standard in number of M.D.'s and dentists, but the number of hospital beds meets the accepted standard. Medical services are concentrated in the urban areas, leaving some villages an hour or more from such service. The region is an excellent outdoor recreation area and has much potential for further recreational development.

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AN INVENTORY OF NATURAL, HUMAN, AND SOCIAL OVERHEAD CAPITAL RESOURCES IN NORTH-CENTRAL NEW MEXICO

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Poverty in one sense is a product of affluence. The terms 'poor' and 'poverty' are often used in a relative sense, identifying individuals or groups who have income well below the income of the mass of society... It is affluence that makes poverty visible (by contrast) and provides the public revenue to spend on poverty programs. Also, much of the alienation of the poor stems from the grim realization that they are not part of the affluence which surrounds them. (14,p.2)

Situation

North-central New Mexico has long been characterized as a poverty area. Some of problems in the area are high unemployment levels (up to four times the national level), low per capita income, deficient social overhead capital, lack of capital for natural resource development, small agricultural units, lack of commodity processing and marketing facilities, and erosion and depreciation of natural resources (13). Many reasons have been advanced for these problems: Cultural and language barriers have inhibited cooperation between Indians, Spanish-Americans, and Anglo settlers; production methods have typically been primitive and outdated; and the tradition of dividing land equally among heirs has resulted in the proliferation of the small, non-commercial agricultural units (13). Suggested in a Resource Conservation and Development report and a factor currently receiving attention is uncertainty and disputes over ownership of property within land grants. These factors and others inhibit growth and development of this region (13).

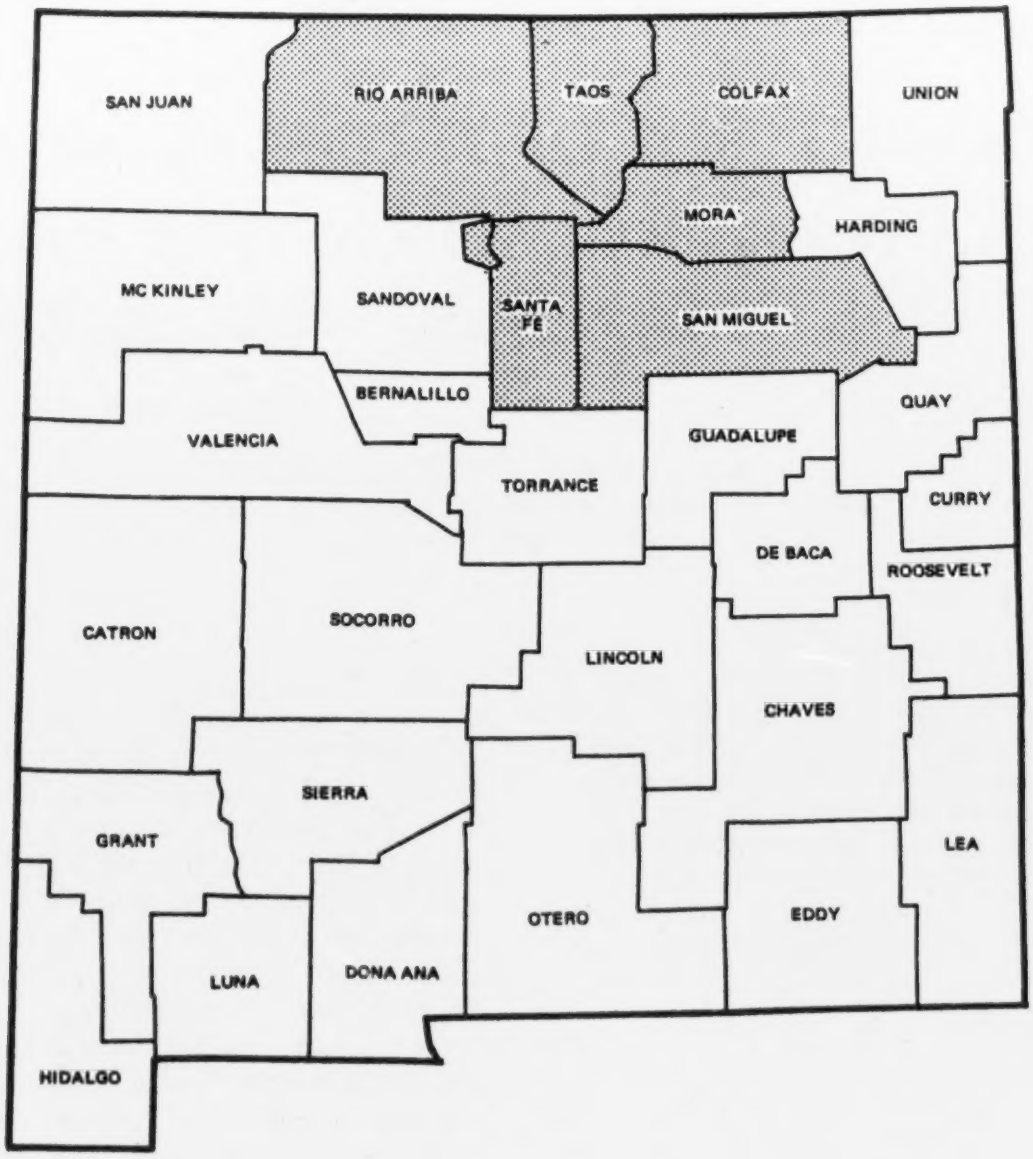
The overall objective of any research project in north-central New Mexico should be to develop strategies for the solution of the region's problems. Before strategies may be developed and evaluated, it is first necessary to summarize basic data to identify and determine the extent of the problems and to specify the resource base which reflects, to a considerable extent, the development potential. This report summarizes much of the basic data relevant for future analysis. In particular, the report includes an inventory of the natural, human, and social overhead capital resources of this region and an identification of the deficiencies or the problems associated with these resources. The data in the report were obtained from secondary sources and represent the most recent publication of any given source.

Delineation of the Region

The study area, referred to in this report as north-central New Mexico, encompasses the seven counties outlined in figure 1.

This region corresponds to Planning and Development District 2, as delineated by the New Mexico State Planning Office (11,p.34). Criteria for the delineation included retention of counties as subunits of each region, existence of a regional service center, a minimum population base, minimum travel time from the regional center to the outlying hinterland, and homogeneity of such socioeconomic characteristics as economic structure, employment, income, resources, ethnicity of the population, and level of educational attainment (11, pp. 27-33). Each district (region) is to "be a

Fig. 1. Study area—north-central New Mexico (State of New Mexico Planning and Development District 2)



comprehensive planning unit, serving as an administrative district for various state governmental responsibilities, and providing the focus for concerted economic development efforts" (11, p. 27). Coordination between research and development action programs should be facilitated by the use of these State Planning Office delineations.

Natural Resources

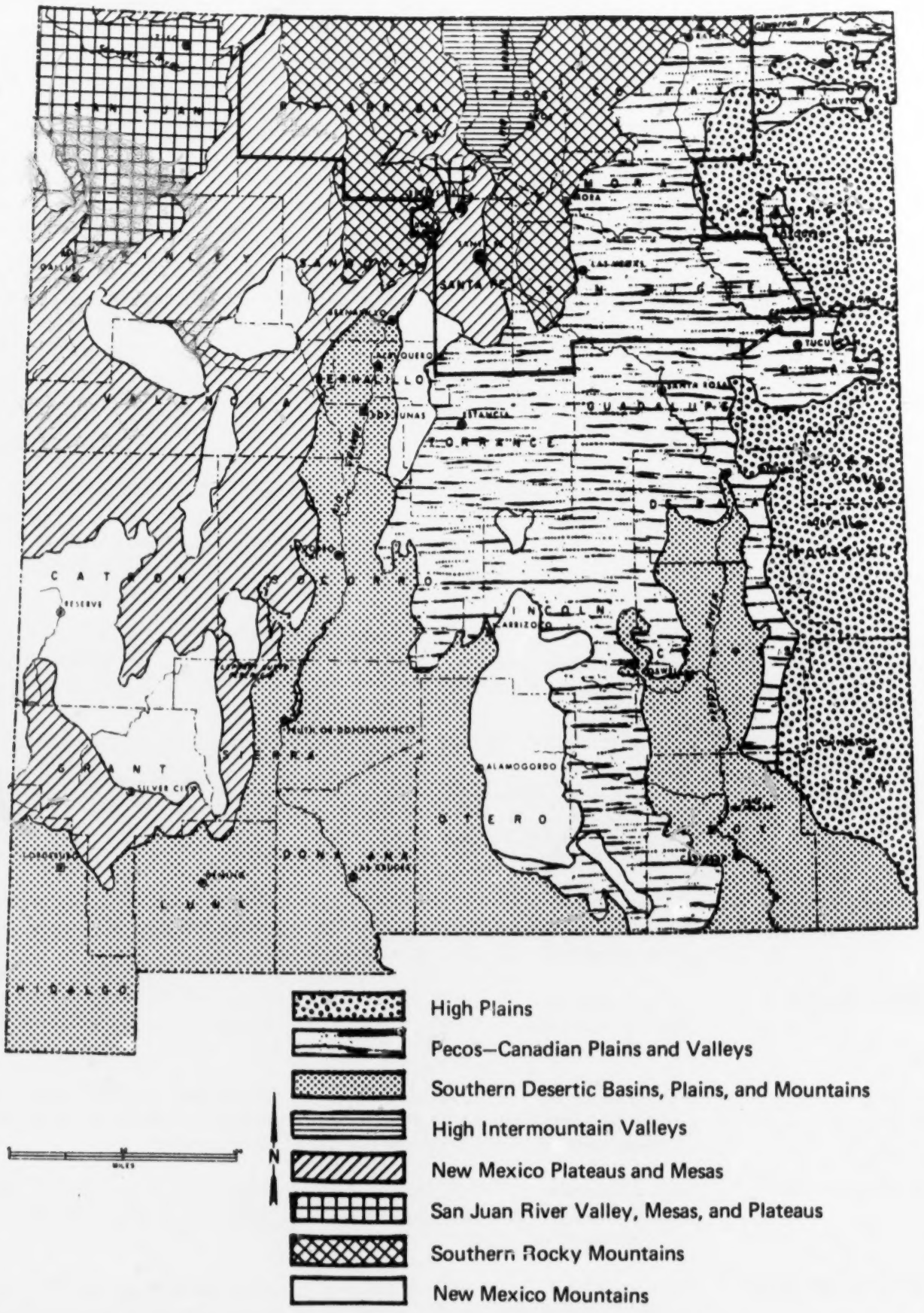
The current status and the potential of a region are often dictated by its resource base.

Physical Characteristics

Topographically, the western and central part of the region is generally mountainous with interspersed valleys and basins, and the eastern slope consists of undulating to rolling uplands interspersed with relatively smooth valleys and basins.

Maker and Dregne have defined eight major land resource areas in New Mexico (5). Resource areas are, by definition, homogeneous with respect to soils, topography, climate, and vegetation. As is evident from figure 2, seven of the eight resource areas exist to some degree in north-central New Mexico. Most prominent are Pecos-Canadian Plains and Valleys, Southern Rocky Mountains, New Mexico Plateaus and Mesas, and High Intermountain Valley resource areas. Table 1 is a summary of the characteristics of these and two minor resource areas. The Pecos-Canadian Plains and Valleys and New Mexico Plateaus and Mesas

Fig. 2. Major land resource areas in New Mexico



Source: Maker, H. J., H. E. Dregne, *Major Land Resource Areas in New Mexico*, New Mexico State University Agricultural Experiment Station Research Report 147, Las Cruces, New Mexico

Table 1. Major land resource areas in north-central New Mexico, characteristics of the resource areas, and counties included by area

Resource Area	Study Region Counties in Resource Area	Elevation Range	Topography
1. High Plains	Southeastern Colfax County	3600 to 6000 feet	Nearly level to gently sloping plains broken by drainage ways and playas
2. Pecos-Canadian Plains & Valleys	Majority of San Miguel and Mora, one-third of Colfax County	4000 to 7000 feet, mountain peaks up to 9000 feet.	Gently undulating to rolling uplands interspersed with relatively smooth valleys and basins
3. High Inter-Mountain Valleys	Half of Taos, minor section of Rio Arriba County	7000 to 8000 feet, mountain peaks to 9000 feet	Nearly level to gently rolling upland cut by steep canyon of the Rio Grande; a few isolated mountains
4. New Mexico Plateaus and Mesas	Approximately one-third of Rio Arriba, one-half of Santa Fe County	5000 to 7500 feet	Broad mesas and plateaus interspersed with deep canyons and dry washes
5. San Juan River Valley	Small sections of Rio Arriba and Santa Fe counties	4900 to 6700 feet	Moderately undulating to rolling plains, broken by small mesas, ridges, bottom-land, and breaks adjacent to drainage
6. Southern Rocky Mountains	Two-thirds of Rio Arriba, one-half of Taos and Colfax, sections of Santa Fe, Mora, and San Miguel counties	6000 to 13,000 feet	Strongly sloping precipitous mountains, gently to moderately sloping stream valleys and plateaus

	Climate		Characteristics of Extensive Soils
1. High Plains	Annual Rainfall: Annual Temperature: Growing Season:	15-18 inches 52-61 degrees F 160-206 days	Deep, neutral, dark-brown to reddish-brown, loamy fine sands, fine sandy loams, loams
2. Pecos-Canadian Plains and Valleys	Annual Rainfall: Annual Temperature: Growing Season:	13-16 inches 49-58 degrees F 130-196 days	Shallow, light brown to grayish brown loams and gravelly loams
3. High Inter-Mountain Valleys	Annual Rainfall: Annual Temperature: Growing Season:	10-15 inches 42-47 degrees F 111-142 days	Deep reddish brown to brown, loams and clay loams, some gravelly and sandy loams
4. New Mexico Plateaus and Mesas	Annual Rainfall: Annual Temperature: Growing Season:	10-17 inches 46-54 degrees F 109-180 days	Moderately deep and deep, sandy loams and loams in uplands, and clay loams and clays in bottomland
5. San Juan River Valley	Annual Rainfall: Annual Temperature: Growing Season:	7-10 inches 50-53 degrees F 140-170 days	Very shallow and shallow, light brownish gray to pale brown, sandy to silty clay loams
6. Southern Rocky Mountains	Annual Rainfall: Annual Temperature: Growing Season:	16-30 inches 35-45 degrees F 35-110 days	Very shallow and shallow, brown to grayish brown loams, gravelly loams, and stoney loams

Source: Maker, H.J., H.E. Dregne, "Major Land Resources in New Mexico", New Mexico State University Agricultural Experiment Station, Research Report 147.

extend to or near the southern border of New Mexico. Hence, the growing season and annual temperature for these areas in the higher altitudes of north-central New Mexico probably approach the lower end of the ranges listed.

A perusal of this information leads to a preliminary implication that topography and climatic factors may constrain the development of a more extensive agricultural base in the seven-county area.

Land

North-central New Mexico, as defined in this report, encompasses 13,162,800 acres, or approximately 17 percent of the total land area in the state. As a means of assessing the potential of the region with respect to the land resource, the following sections on land ownership and use patterns and land title problems are presented.

Land Ownership Patterns

> In an inventory of New Mexico resources the question of who has what rights to the use of the resources is important. For the land resources, these rights and who holds them affects the type and intensity of land use, encourages or discourages investments in land improvements, and determines the base for tax purposes. (4,p.13)

Table 2 is a summary of the land ownership patterns within the region. Nearly 60 percent of the land is privately owned, compared with approximately 44 percent private ownership within the state. The degree of private ownership varies considerably among the counties. As computed from the table, 87.6 percent of Colfax and 84.5 percent of Mora counties are privately owned. Conversely, all of Los Alamos county, a special governmental entity, 72.6 percent of Rio Arriba, and 62.2 percent of Taos county land areas are public or Indian property.

Table 3 is a summary of the federal land distribution by administering agencies. The Forest Service and Bureau of Land Management control more than 3.5 million acres, or approximately 98 percent of the federal land in the seven counties. These lands have been a subject of conflict between the public and private sectors. Public agencies, adhering to multiple use and conservation policies, have reduced or restricted grazing privileges on lands under their jurisdiction. Some of the land has been shifted to other uses, some has been left idle in an attempt to reestablish desired vegetative cover. Persons who are adversely affected by these policies question them. For effective regional development, these conflicts and the ramifications of large federal land holdings must be considered and evaluated. The ultimate use of federal lands will affect the rate of regional development, particularly as federal land policies affect extractive industries and recreational development.

Land Use Patterns

Table 4 includes the most recent data on land use patterns in north-central New Mexico. The

Table 2. Land ownership patterns, north-central New Mexico, by county and New Mexico, 1968

Unit	Land Area	Federal Land	Indian Land	State Land	Private
	acres	acres	acres	acres	acres
Colfax	2,408,900	15,700	0	282,600	2,110,600
Los Alamos	69,100	69,100	0	0	0
Mora	1,241,600	107,600	0	84,400	1,049,600
Rio Arriba	3,746,000	1,948,600	646,900	123,100	1,027,400
San Miguel	3,034,400	394,700	0	179,300	2,460,400
Santa Fe	1,219,300	413,400	79,500	90,500	635,900
Taos	1,443,500	733,300	62,300	102,700	545,200
Total	13,162,800	3,682,400	788,700	862,600	7,829,100
Percent	100.0	28.0	6.0	6.5	59.5
State					
Total	77,724,900	26,759,400	7,313,600	9,680,200	33,971,700
Percent	100.0	34.4	9.4	12.5	43.7

Source: New Mexico Blue Book 1969-1970, published by Ernestine D. Evans, Secretary of State

Table 3. Federal land in north-central New Mexico, by administrative agency and county, 1962[1]

County	Forest Service	Bureau of Land Management	Park Service	Bureau of Reclamation	Bureau of Indian Affairs	Atomic Energy Commission	Total
	acres	acres	acres	acres	acres	acres	acres
Colfax	10,196	261	0	984	0	0	11,441
Los Alamos	0	0	0	0	0	69,120	69,120
Mora	99,280	7,561	721	0	0	0	107,562
Rio Arriba	1,386,960	572,121	0	9,205	106	0	1,968,392
San Miguel	321,647	65,913	0	4,522	0	0	392,082
Santa Fe	250,950	85,634	0	0	116	0	336,700
Taos	526,466	207,817	0	0	7	0	734,290
Total	2,595,499	939,307	721	14,711	229	69,120	3,619,587
Percent	71.71	25.95	0.02	0.41	0.00	1.91	100.0

[1]Total federal acreage differs from table 2 because "other" federal lands were not considered and because of the data time differential.

Source: Abstracted from table 10, Agricultural Land and Water in New Mexico, State Planning Office, Santa Fe.

Table 4. Land area, non-agricultural and agricultural acreages, north-central New Mexico, 1967[a]

County	Non-Agricultural Acreages: Federal non-cropland	Non-Agricultural Acreages: Urban and built-up	Non-Agricultural Acreages: Small water areas	Agricultural Acreage	Total Land Area
Colfax					
Acres	15,740	26,000	1,150	2,366,710	2,409,600
Percent	.65	1.08	.05	98.22	100.00
Mora					
Acres	107,642	5,885	650	1,128,703	1,242,880
Percent	8.66	.47	.05	90.82	100.00
Rio Arriba					
Acres	1,948,574	22,101	2,680	1,782,025	3,755,380
Percent	51.89	.59	.07	47.45	100.00
San Miguel					
Acres	394,214	17,249	2,624	2,625,273	3,039,360
Percent	12.97	.57	.09	86.37	100.00
Santa Fe					
Acres	413,412	27,102	2,600	777,366	1,220,480
Percent	33.87	2.22	.22	63.69	100.00
Taos					
Acres	733,324	7,561	797	702,158	1,443,840
Percent	50.79	.52	.06	48.63	100.00
Los Alamos					
Acres	69,120	0	0	0	69,120
Percent	100.00				100.00
Total Acres	3,682,026	105,898	10,501	9,382,235	13,180,660
Percent	27.94	.80	.08	71.18	100.00

[a]Data in tables 2, 3, and 4 are from different sources and for different time periods, hence totals may differ.

Source: Table 1, New Mexico Conservation Needs Inventory, 1966-67, State Soil and Water Conservation Needs Committee

categories of non-agricultural acreage are listed in the table; agricultural acreages include all non-federal rural lands that are used or could be used for the production of food and fiber crops and all federally owned cropland that is leased to individuals (6,p.23). More than 70 percent of the seven-county land area is devoted to the production of agricultural products.

The pattern among counties varies considerably: Rio Arriba, Los Alamos, and Taos counties have

less than half of their acreage in agricultural production, while over 90 percent of the land in Colfax and Mora counties are utilized by farmers and ranchers.

Urban and built-up areas which include a) cities, villages, and built-up areas of more than 10 acres; b) industrial sites, railroad yards, cemeteries, golf courses, etc.; and c) institutional and public administrative sites and small areas of water occupy less than one percent of the land area in the region.

Agricultural land use patterns for the region are presented in table 5. Range and forest enterprises occupy over 96 percent of the region's non-federal rural land. Less than half (49.11 percent) of the forest lands in agriculture are considered commercial forests, *i.e.*, forest land which is producing or capable of producing crops of industrial wood. Of the 3,380,327 acres of forest lands, 3,159,742 acres, or 93.47 percent of the total, are also used for grazing of domestic livestock. Approximately 67 percent of the total land area in north-central New Mexico is either primary or secondary grazing land (6).

The irrigated and dryland cropping pattern by county is summarized in table 6. Production of field crops and hay appears to be the major use of the available cropland. Approximately 94,500 acres, now idle for conservation use or formerly cropped, should be available if cropping activities are intensified. Cropping, however, will probably continue to be a very minor use of the region's land resource.

The limited availability of cropland, as indicated by these data, probably constrains the growth of the region's agriculture industry. Another problem, not evident in these data but possibly a more serious constraint, is the small size of irrigated agricultural units. As indicated in table 7, nearly half of the irrigated farms in the region have less than 10 irrigated acres; over 87 percent have less than 50 acres of irrigated land. A strategy for development of the region's agricultural industry must include consideration of consolidating small irrigated farms into commercial units.

Land Title Problems

The question of rights in land use and ownership is a major public policy issue and is significant in a consideration of development programs in north-central New Mexico. Land title problems are attributed to the complex cultural and political history of the region. State and national attention has been focused on the problem by the Alianza's effort to reclaim title to Spanish land grants.[1] A

[1]The Alianza is the Alianza Federal de Mercedes or the Alianza de los Pueblos Libres led by Reies Lopez Tijerina.

Table 5. Agricultural lands, north-central New Mexico, 1967

County	Cropland	Pasture	Range	Forest	Other
Colfax					
Acres	67,755	7,000	1,479,140	776,573	36,242
Percent	2.86	.30	62.50	32.81	1.53
Mora					
Acres	16,855	9,201	867,890	226,478	8,279
Percent	1.49	.82	76.89	20.07	.73
Rio Arriba					
Acres	35,509	7,025	754,545	933,266	51,680
Percent	1.99	.40	42.34	52.37	2.90
San Miguel					
Acres	12,541	1,595	1,897,911	709,939	3,287
Percent	.48	.06	72.29	27.04	.13
Santa Fe					
Acres	34,246	397	363,911	367,166	11,646
Percent	4.41	.05	46.81	47.23	1.50
Taos					
Acres	28,121	5,564	281,487	366,905	20,081
Percent	4.00	.79	40.09	52.26	2.86
Total					
Acres	195,027	30,782	5,644,884	3,380,327	131,215
Percent	2.08	.33	60.17	36.03	1.39

Source: Table 2, New Mexico Conservation Needs Inventory, 1966-67, State Soil and Water Needs Committee

Table 6. Irrigated and dry cropland acres, north-central New Mexico, 1967

County	Total Field Crops	Rotation Hay and Pasture	Hayland	Conservation Use Only	Temporarily Idle Cropland	Orchards Vineyards	Open Land Formerly Cropped	Total Cropland
Colfax								
Acres	14,831	659	11,969	21,010	8,056	0	11,230	67,755
Percent	21.89	.97	17.67	31.01	11.89	0	16.57	100.0
Mora								
Acres	2,683	125	3,808	1,056	4,651	132	4,400	16,855
Percent	15.92	.74	22.59	6.27	27.59	.78	26.11	100.0
Rio Arriba								
Acres	11,623	0	15,575	3,649	1,310	2,998	354	35,509
Percent	32.73	0	43.86	10.28	3.69	8.44	1.00	100.0
San Miguel								
Acres	4,174	2,800	1,966	733	2,383	83	402	12,541
Percent	33.28	22.33	15.68	5.84	19.00	.66	3.21	100.0
Santa Fe								
Acres	5,878	6,940	1,250	17,500	835	753	1,090	34,246
Percent	17.16	20.27	3.65	51.10	2.44	2.20	3.18	100.0
Taos								
Acres	4,066	0	8,000	1,018	8,268	166	6,603	28,121
Percent	14,46	0	28.45	3.62	29.40	.59	23.48	100.0
Total								
Acres	43,255	10,524	42,568	44,966	25,503	4,132	24,079	195,027
Percent	22.18	5.39	21.82	23.06	18.08	2.12	12.35	100.0

Source: Table 3A, New Mexico Conservation Needs Inventory, 1966-67, State Soil and Water Needs Committee

Table 7. Farms with irrigated land, by number of acres irrigated, north-central New Mexico, 1964

Irrigated Acres	Number of Farms by County						
	Colfax	Mora	Rio Arriba	San Miguel	Santa Fe	Taos	Region Total
1-9	11	87	549	95	164	214	1120
Percent	10.28	43.50	56.60	48.47	68.33	38.35	49.32
10-49	40	88	326	66	55	282	857
Percent	37.38	44.00	33.61	33.67	22.92	50.54	37.74
50-99	20	11	51	19	6	45	152
Percent	18.69	5.50	5.26	9.70	2.50	8.06	6.69
100-199	18	4	24	8	7	12	73
Percent	16.83	2.00	2.47	4.08	2.92	2.15	3.22
200-499	12	7	12	4	5	3	43
Percent	11.22	3.50	1.24	2.04	2.08	.54	1.89
500-999	3	1	8	4	2	2	20
Percent	2.80	.50	.82	2.04	.83	.36	.88
1000+	3	2	0	0	1	0	6
Percent	2.80	1.00	.00	.00	.42	.00	.26
Total	107	200	970	196	240	558	2271
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1964 United States Census of Agriculture -- New Mexico, United States Department of Commerce, Bureau of Census, Volume 1, Part 42, 1967

similar problem receiving recent attention is title clearance of undisputed private property. Some land in this area has, for generations, been willed, sold, and traded without legal documentation. Some land titles were faulty with respect to the original delineation of boundaries and have not been corrected (9, p. 16-21). Lack of clear titles hinders economic development because property transactions are at best difficult and expensive, and property without a clear title can not be used as collateral for expansion and development loans. The Farmers Home Administration loan program in north-central New Mexico has been constrained because:

1. Loans and insured funds are tied up for long periods during the title clearance process,
2. The cost of title clearance is sometimes greater than the value of many small tracts such as home sites, and
3. The people are reluctant to submit the title for clearance because they distrust authorities or fear that, because of a faulty title, they might lose their land. (9,p.21)

The state of New Mexico is currently considering initiation of a land title clearance program. The adoption and success of such a program would remove what might be a barrier to economic development and growth.

Water Resources

> Generally speaking, studies in hydrology have most significance when approached from the viewpoint of integrated drainage systems or hydrologic units, as opposed to county wide or local area concerns. (12,p.87)

Accordingly, the State Engineers have delineated nine major hydrologic units within the state; five of these exist in north-central New Mexico. As indicated in figure 3, the relevant basins are those of the San Juan River, the Rio Grande, the Arkansas River, and the Pecos River, along with the Central Closed Basin. Most of the region is in either the Rio Grande or Arkansas River basins.

Because water supply and depletion data are compiled by hydrologic unit, it is difficult to assess the region's water resource availability. Figure 4 graphically illustrates the mean discharge of principal streams. The level of water yield in the Arkansas, Rio Grande, and Pecos river basins is closely associated with the level of precipitation in the mountains of north-central New Mexico. On the other hand, most of the depletion should occur outside the region in the irrigated agricultural and the metropolitan areas.

State engineers, granting that water could be a limiting factor in New Mexico's economic development, point out:

> Substantial qualities of the water New Mexico is entitled to use, under interstate compacts, have not yet been developed for beneficial use. Also, the trend toward industrialization and urbanization in our economic development can be greatly extended by orderly redistribution of water among beneficial uses under present water laws; and much water now wasted can be salvaged by controlling uneconomic vegetation as well as by generally increasing efficiency in all types of use. (12,p.93)

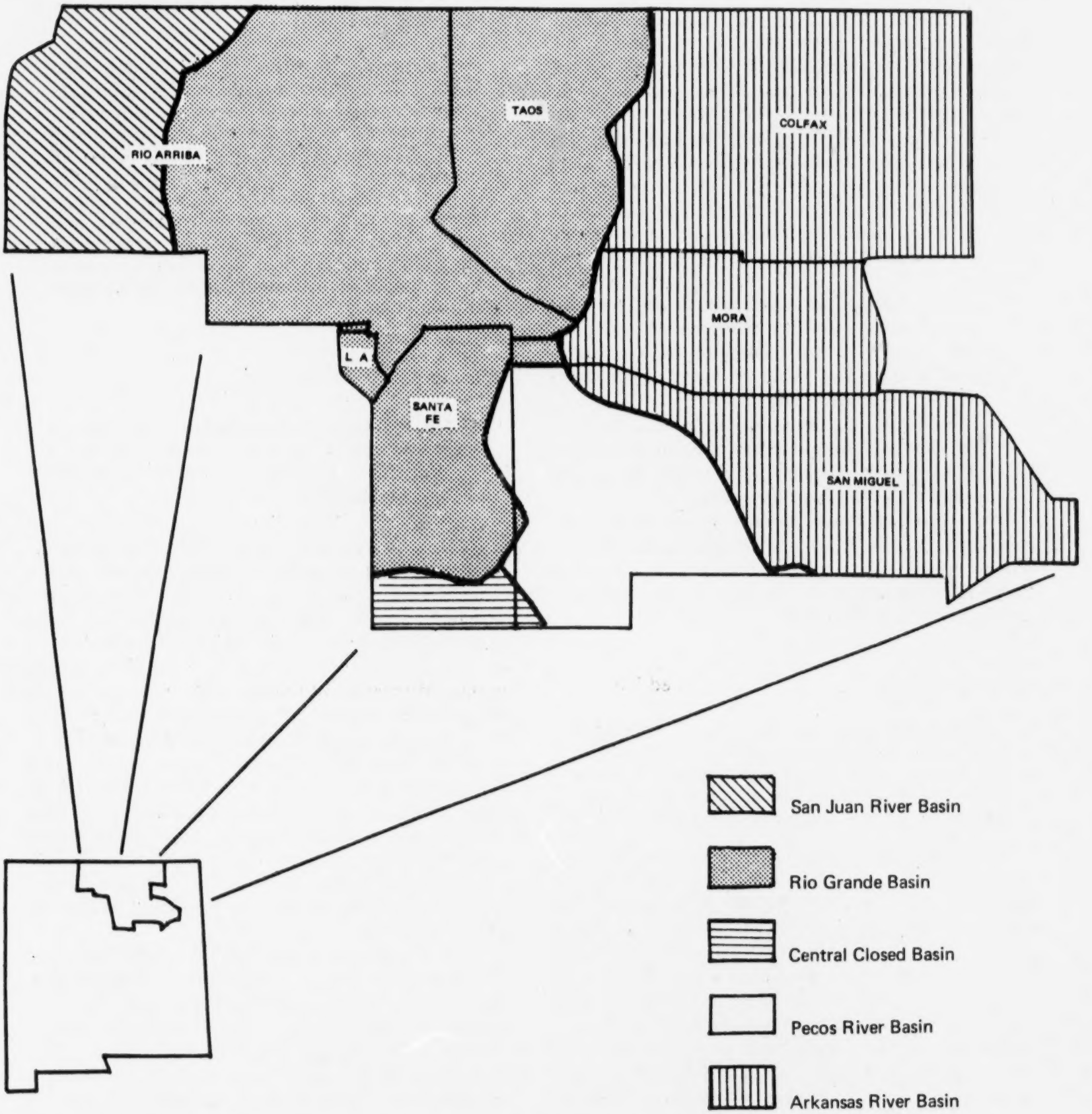
Minerals

> New Mexico is naturally endowed with an impressive array of mineral wealth—as much or more than any area of similar size in the United States. (12,p.45)

Table 8 is a summary of the contribution of the mineral industries to the economy in north-central New Mexico. Over 90 percent of the 1966 production, in dollars, was in Rio Arriba and Taos counties. The western part of Rio Arriba County is in the San Juan Basin oil and gas field, which accounts for most of the mineral extraction in that county. The major mineral industry operation in Taos County is the Molybdenum Corporation of America Mine-Mill Company near Questa. This firm extracts and refines molybdenum for out-of-state users. A major mining operation in Colfax County, not included in these data, is the Kaiser Steel Corporation Coal Mine near Raton. This operation is expected to yield 700,000 tons of coal annually for the company's Fontana, California, plant (9,p.160).

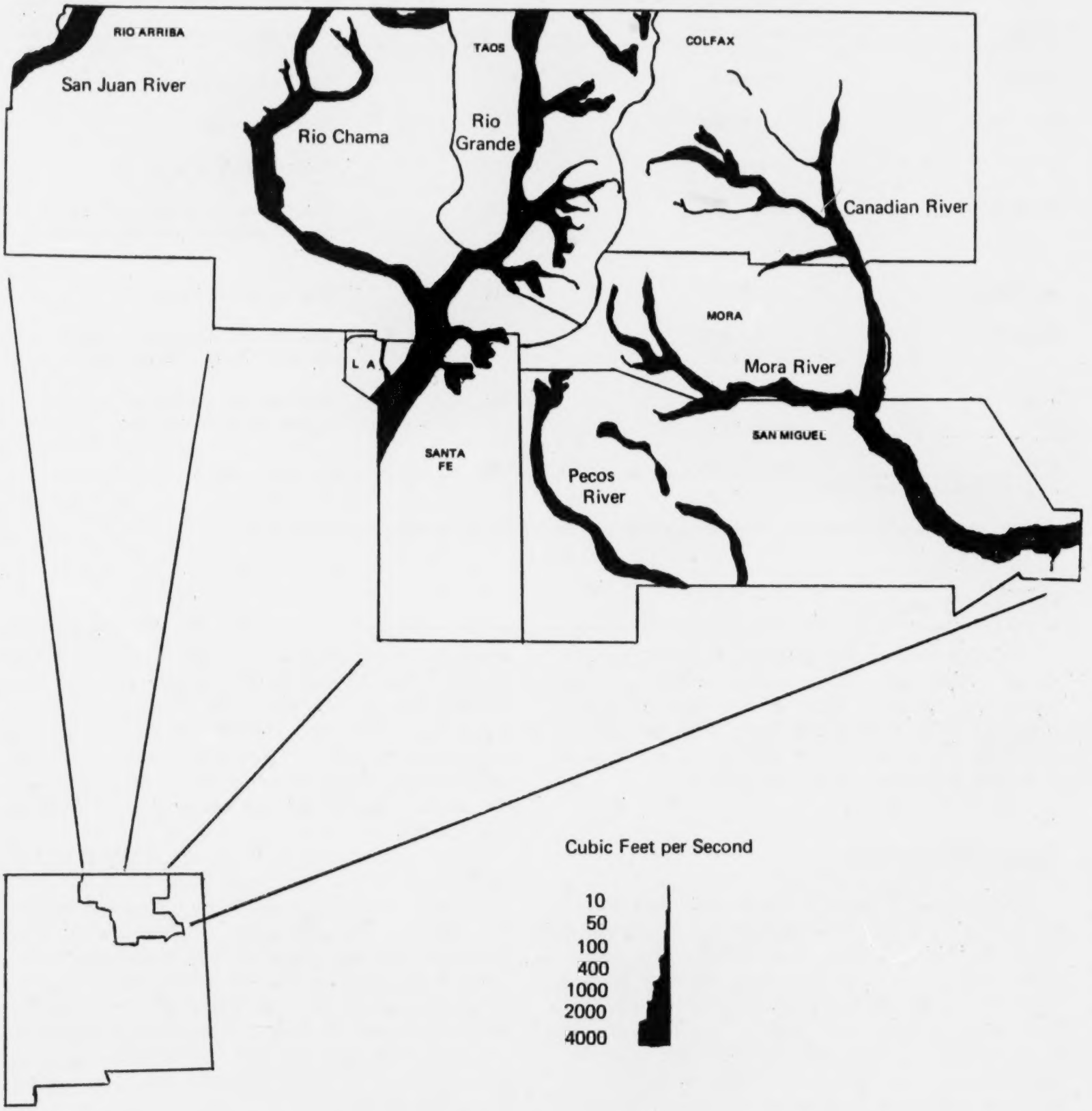
Data are not readily available on the potential of mineral extraction in north-central New Mexico. Bulletin 87, *Mineral and Water Resources of New Mexico,* prepared by the United States Geological Survey, lists mineral deposits in the state (20). According to this source, there is, for example, a potential for commercial oil and gas extraction in the Chama, Las Vegas, and Raton basins; expanded coal mining operations in Colfax and Santa Fe counties; zinc mining in Santa Fe County; and iron ore extraction in Rio Arriba and Taos counties (20). The commercial development of these resources, when or if supply and demand warrant, could provide a significant stimulus to the region's economy.

Fig. 3. Drainage basins in north-central New Mexico



Source: Abstracted from D. C. Henderson and H. R. Stucky, *Agricultural Land and Water in New Mexico*, State Planning Office, Santa Fe, New Mexico, 1966

Fig. 4. Mean discharge of streams, in cubic feet per second, north-central New Mexico



Source: United States Geological Survey, *Mineral and Water Resources of New Mexico*, Bulletin 87, New Mexico Bureau of Mines and Mineral Resources, Socorro, New Mexico, 1965

Table 8. Value of mineral production in north-central New Mexico, by counties, 1966

County	Value of Mineral Production in 1966	Percent of Regional Total	Minerals Extracted in Order of Value
	dollars		
Colfax	Withheld		Coal, stone, sand and gravel
Los Alamos	75,000	0.25	Sand and gravel
Mora	194,000	0.64	Sand and gravel, mica
Rio Arriba	12,339,210	40.76	Natural gas, petroleum, LP gases, natural gasoline, sand and gravel, stone
San Miguel	1,570,630	5.19	Sand and gravel, stone
Santa Fe	930,526	3.07	Sand and gravel, gypsum, stone, pumice, copper, silver, gold
Taos	15,161,423	50.09	Molybdenum, perlite, sand and gravel, mica, clays, stone
Total*	30,270,789	100.00	

*Excluding Colfax county

Source: 1967 Mineral Volume III, Area Reports, U. S. Department of the Interior, Bureau of Mines

Human Resources

The objective of this section is to summarize the most important social characteristics of the region's population. Most of the data are drawn from the U.S. Census and have been selected to paint, in broad strokes, a picture of the human resources in north-central New Mexico.

Regional Demography

As indicated in table 9, the decade of the sixties has seen only a very modest population growth in New Mexico. During the fifties, the state's population growth rate was approximately 40 percent. The population growth rate of north-central New Mexico has been slightly lower than the state's and is largely accounted for in two counties, Los Alamos and Santa Fe. Taos experienced a more modest eight percent rate of growth, and Rio Arriba increased less than two percent. There is the familiar pattern of rural to urban migration taking place within the area.

Taos city had a population of 2,431 in the 1970 Census, just short of the 2,500 necessary to qualify as urban. Espanola, which straddles the Rio Arriba-Santa Fe boundary, has also grown rapidly during the decade and has a population of 2,683, sufficient to be classified as urban in 1970. The populations of Raton in Colfax County and Las Vegas in San Miguel County declined during the sixties by 1,410 and 233, respectively.[2] In summary, the Los Alamos-Espanola-Santa Fe urban axis experienced the primary concentration of population in-migration within the region during the sixties, and Taos experienced a much smaller concentration.

Figure 5 compares age and sex makeup of the population in the area with that of the 48 contiguous states of the United States. In north-central New Mexico, the proportion of the population in the dependent age group of 0-19 years is relatively higher than that in the 48 states, and the proportion in productive age group of 20-65 years is relatively lower. This means that there is a relatively heavy burden on the productive working population to support schools, etc., for a large dependent group.

Ethnic Groups

All three cultural components of New Mexican society are represented in these seven counties, and

[2]These are preliminary figures as published in the Albuquerque Journal, May 28, 1970, p. A-5.

in a unique blend. The Spanish-Americans, who are the majority group, trace their ancestry to the original conquistadores and much of their surviving culture to seventeenth century Spain. However, both blood lines and culture have been profoundly modified through long interaction with the Pueblo Indians.

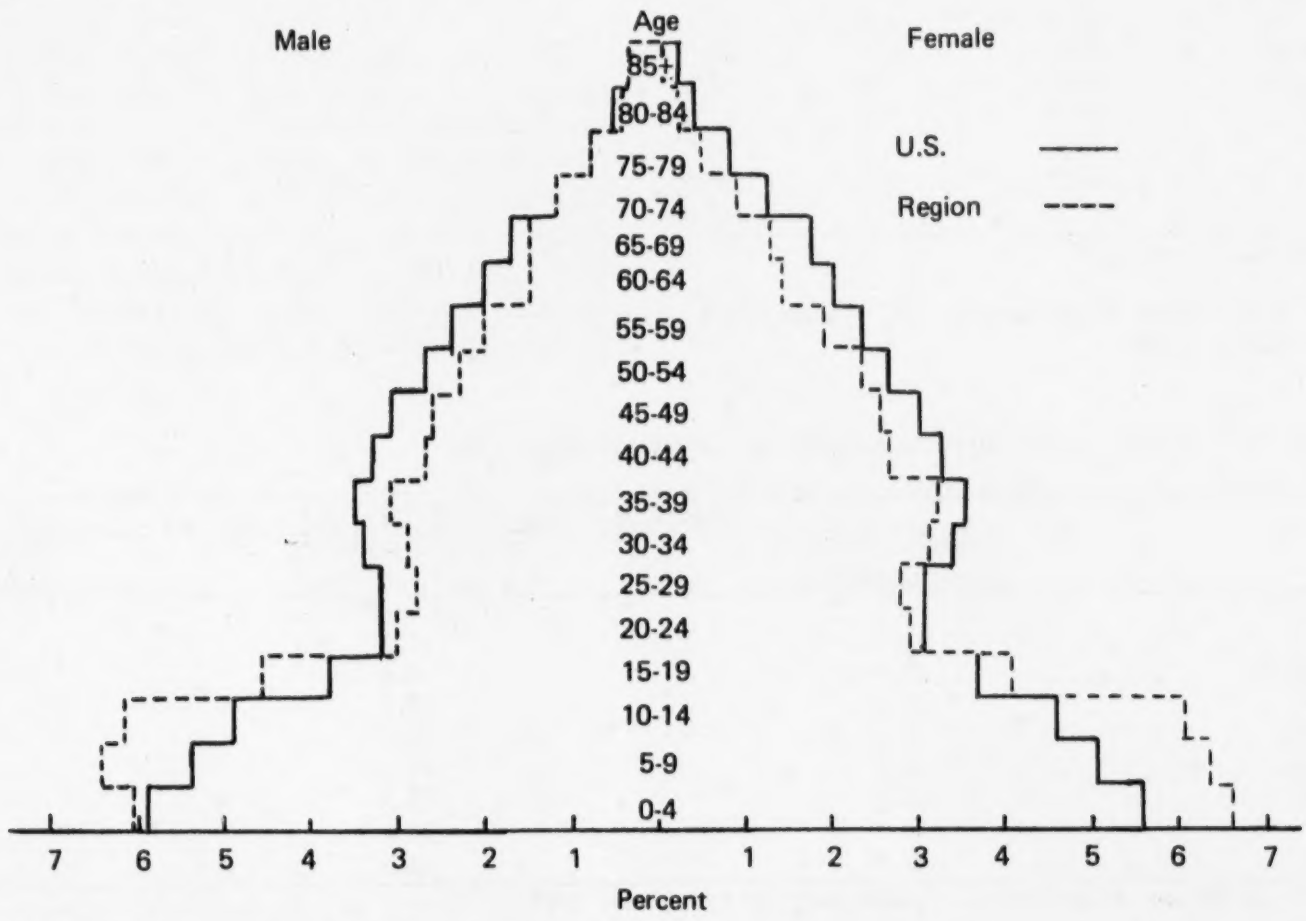
After the original settlement took place, Santa Fe became the administrative seat of the Spanish government and, although there was a definite

Table 9. Population, population change, and urbanization by county, region, and state

County	Population 1960	Population 1970	Population Change 1960-1970	Urban Residence 1970
			percent	percent
Colfax	13,806	12,170	-11.8	57.2
Los Alamos	13,037	15,198	16.6	99.8
Mora	6,028	4,673	-22.5	0.0
Rio Arriba	24,193	25,170	4.0	0.0
San Miguel	23,468	21,951	-6.5	63.0
Santa Fe	44,970	53,756	19.5	77.7
Taos	15,934	17,516	9.9	0.0
Total	141,436	150,434	6.4	54.0
State	951,023	1,014,979	6.7	68.9

Source: 1970 Census of Population, Advance Report, PC(VI)-33 New Mexico, Final Population Counts

Fig. 5. Composition of population by sex and age group for the contiguous United States and for north-central New Mexico, 1960



Source: U.S. Bureau of Census, U.S. Census of Population: 1960

loyalty to the Crown, both Mexico City and mother Spain were far away. Isolation accounts in no small part for the development and preservation of the unique culture which persists to the present time in north-central New Mexico. The Spanish-American of this region is culturally distinct from all others with roots in the Iberian Peninsula, even from the Mexican-Americans in other areas of New Mexico.

Some of the larger pueblos have maintained many of their cultural traditions, while the smaller ones have been nearly swallowed up by the Spanish and Anglo worlds around them. The Indian with his own culture and special status before the federal government has to be considered quite separate and apart from the other two groups in matters of government policy and programs, although his numbers in this region are not large, as can be seen in table 10.

Table 10. Ethnic composition of the population by county, region, and state

County	Spanish Surname 1960	Indian 1960	Anglo-American 1960
	percent	percent	percent
Colfax	40.1	*	59.2
Los Alamos	11.2	*	88.1
Mora	85.4	0	14.6
Rio Arriba	69.6	9.7	20.5
San Miguel	68.5	*	30.9
Santa Fe	54.3	1.9	43.2
Taos	69.1	6.2	24.3
Region	56.9	3.0	39.5
State	28.3	5.9	63.8

*Less than 1.0 percent

Source: U.S. Bureau of the Census, U.S. Census of Population: 1960

Education

It can be clearly seen in table 11 that the rural counties lag far behind the major urban centers of Los Alamos and Santa Fe and the state in educational achievement. Los Alamos is ahead of the state averages in all three categories while Santa Fe is very close to the state averages in all three. In four counties—Mora, Rio Arriba, San Miguel, and Taos—some three-fourths of the population over 25 years of age had less than a high school education in 1960.

Income Distribution and Unemployment

In addition to the rather straight-forward welfare, unemployment, and income figures in table 12 are the underemployment figures.

> The concept of involuntary economic underemployment used here may be formally defined as the man-equivalent years of economically unutilized manpower among employed civilians that exists in a specified group as a result of failure to utilize manpower of the group as effectively as labor of comparable income-earning capacities and economically relevant values and tastes is utilized in the U.S. economy as a whole. (22, p. 1433)

An example would be the farmer whose operation is so small that it needs only part of his potential labor, so that he, in effect, is only partially employed. A negative figure means a higher-than-average (for the U.S.) utilization of labor. Los Alamos County makes good use of its male labor force but has a high underemployment among females, mostly highly educated wives of professional people. It is more difficult to explain the

Table 11. Education of persons 25 years and older by county and state, 1960

County	Education -- Persons 25 Years and Older		
	Median school years completed	Completed less than five years of school	Completed high school or more
		percent	percent
Colfax	9.8	12.9	37.1
Los Alamos	12.9	0.6	80.4
Mora	7.3	32.6	16.7
Rio Arriba	8.1	29.4	23.2
San Miguel	8.1	24.9	27.3
Santa Fe	11.7	12.3	48.6
Taos	8.3	25.1	24.9
State	11.2	12.2	45.5

Source: U.S. Bureau of the Census. County and City Data Book, 1967.

Table 12. Income, welfare, and unemployment rates by county and state

County	Median Income (a)	Income (a) Under $3,000	Income (a) $10,000 or more	Welfare Recipients 1964* (a)	Estimated Unemployment 1965 (b)	Underemployment 1960 (c) Male	Underemployment 1960 (c) Female
	dollars	percent	percent	percent	percent	percent	
Colfax	4,325	32.5	8.1	7.4	7.7	18.9	32.4
Los Alamos	9,269	2.1	43.5	**	1.8	-0.4	42.8
Mora	2,094	68.9	1.7	15.8	15.7	32.3	-15.2
Rio Arriba	2,984	50.2	6.7	11.4	20.7	6.8	25.7
San Miguel	2,905	51.4	6.2	14.1	11.6	43.4	13.9
Santa Fe	5,182	26.3	15.0	5.6	5.4	18.1	2.5
Taos	2,204	64.9	3.5	14.1	13.6	37.7	17.9
State	5,371	24.4	14.3	4.6	5.5	--	--

*Percent of 1964 estimated total population

**Less than 0.1 percent

Source: a) U.S. Bureau of the Census, County and City Data

b) North-central New Mexico Development Districts Overall Economic Development Program, p.85.

c) Underemployment Estimates by County, United States, 1960 Agricultural Economic Report No. 166, Economic Research Service, U.S.D.A.

Table 13. Trends in employment in north-central New Mexico by economic sector, 1960-67

Sector	Number Employed 1960	Number Employed 1967	Change in Employment Total	Change in Employment Percent of 1960
Agricultural[1]	3,960	2,360	-1,600	-40.4
Non-Agricultural	35,320	41,690	6,370	18.0
Self-employed	3,230	3,410	180	5.6
Wage and salary	32,090	38,280	6,190	19.3
Mining	490	540	50	10.2
Construction	2,030	2,020	-10	-0.5
Manufacturing	1,850	1,660	-190	-10.3
Transportation and utilities	1,950	1,550	-400	-20.5
Trade	5,200	6,290	1,090	21.0
F.I.R.E.[2]	920	1,240	320	34.8
Services and miscellaneous	7,370	8,090	720	9.8
Government	12,280	16,890	4,610	37.5
Total	39,280	44,050	4,770	12.1

[1] Includes farm proprietors, regularly employed unpaid family labor, self-employed, and wage workers

[2] F.I.R.E. = Finance, insurance, and real estate

Source: Bureau of Business Research, Income and Employment in New Mexico, 1960-64 and 1966-67

abnormally high utilization of female labor in Mora County or of male labor in Rio Arriba County.

As can be seen in table 12, four counties–Mora, Rio Arriba, San Miguel, and Taos– had 1960 median incomes below the $3,000 commonly accepted poverty level. The median income in Los Alamos is much higher than that of any other county and much higher than the state median. The income distribution figures tell much the same story: only Los Alamos had more incomes above $10,000 per annum than below $3,000. Santa Fe incomes are intermediate between Los Alamos and the other counties and fall very near the state average in all categories. As expected, the percentage of welfare recipients and the estimated unemployment rate are very highly correlated, and they are inversely correlated with the median income. In summary, incomes are low in the rural areas of the counties, and unemployment and welfare rolls are large.

Occupational Profile

There has been a large increase in government employment in the area, as can be seen in table 13.

State government in Santa Fe is the major industry. Presumably some of the large increase in employment in this sector stems from the proliferation of poverty and other governmental programs during the sixties.

As is typical throughout the country, agricultural employment in the area is declining rapidly. It provides only a small proportion of all jobs and certainly a small proportion of the area income.

The relatively low and declining proportion of manufacturing jobs says a great deal about the industrial base of the region. This employment pattern is, of course, intimately related to the population movement to urban areas described earlier. The changing employment profile mirrors economic and technical changes taking place in the larger society. Its social consequences are profound, *e.g.*, the dislocations caused by the movement of people out of agriculture. A county-by-county breakdown of the data in table 13 appears in table 14.

Table 14. Employment and personal income, by sector and county, north-central New Mexico, 1967

Item	Colfax	Los Alamos	Mora	Rio Arriba	San Miguel	Santa Fe	Taos	Total	Percentage District	Percentage State
Employment (number)	4,250	6,670	1,150	5,170	5,990	17,050	3,770	44,050	100.00	100.00
Agricultural	400	0	390	390	590	200	390	2,360	5.36	5.60
Non-agricultural	3,850	6,670	760	4,780	5,400	16,850	3,380	41,690	94.64	94.40
Self-employed	530	130	60	290	550	1,340	510	3,410	7.74	8.20
Wage and salary	3,320	6,540	700	4,490	4,850	15,510	2,870	38,280	86.90	86.20
Mining	N.A.	0	0	70	N.A.	70	400	540	1.23	4.50
Construction	60	170	N.A.	490	270	860	170	2,020	4.59	4.70
Manufacturing	520	N.A.	N.A.	170	250	600	120	1,660	3.77	5.20
Transportation and utilities	300	30	N.A.	260	300	580	80	1,550	3.52	5.80
Trade	680	380	30	750	860	3,010	580	6,290	14.28	16.30
F.I.R.E.[1]	120	80	N.A.	100	140	730	70	1,240	2.81	3.20
Service and miscellaneous	770	1,770	390	870	460	3,200	630	8,090	18.36	18.40
Government	870	4,110	280	1,780	2,570	6,460	820	16,890	38.34	28.10
Personal Income (thousands of dollars)	27,216	58,025	8,628	46,947	36,430	124,993	23,663	325,902	100.00	100.00
Wages and salaries	14,474	52,932	3,805	28,298	18,923	78,925	13,203	210,560	64.61	67.70
Agriculture	401	0	211	274	464	295	63	1,708	0.53	0.80
Mining	N.A.	0	0	461	N.A.	465	3,381	4,307	1.32	4.80
Construction	254	1,170	N.A.	3,837	1,275	5,524	849	12,909	3.96	4.20
Manufacturing	2,155	N.A.	N.A.	720	780	3,378	363	7,396	2.27	4.40
Transportation and utilities	2,026	220	N.A.	1,649	2,110	3,341	453	9,799	3.01	5.40
Trade	2,183	1,488	56	2,899	2,614	12,538	1,921	23,699	7.27	9.70
F.I.R.E.[1]	625	419	N.A.	548	614	3,942	315	6,463	1.98	2.40
Services and miscellaneous	2,954	9,602	2,431	3,381	1,133	11,633	1,673	32,807	10.07	12.20
Government	3,876	40,033	1,107	14,529	9,933	37,809	4,185	111,472	34.20	23.80
Other Labor Income	823	735	284	846	446	4,570	652	8,356	2.56	2.80
Proprietor Income	5,157	2,079	2,056	4,570	4,373	13,256	2,011	33,492	10.28	11.90
Business and professional	2,003	2,079	690	2,440	2,277	12,330	1,541	23,360	7.17	7.30
Farm	3,154	0	1,366	2,120	2,096	926	470	10,132	3.11	4.60
Property Income	3,923	3,144	1,200	6,920	5,933	18,535	3,571	43,226	13.26	12.20
Transfer Payments	3,642	1,453	1,497	7,634	7,664	13,331	4,827	40,048	12.29	8.50
Less Social Insurance	-803	-2,318	-214	-1,311	-909	-3,624	-601	-9,780	-3.00	-3.10

[1]F.I.R.E. = Finance, insurance, and real estate

Source: Bureau of Business Research, **Income and Employment in New Mexico**, 1966 and 1967

The level of public services offered is vitally important to any region. The quality of life of residents is directly associated with the quality of educational, health, transportation, communication, recreational, and other services. In addition, the level of public services is a key factor in attracting business and human resources to a developing region.

Educational Services

Quality of education may be dependent upon how well the unique educational needs of an area are satisfied as well as the qualifications of the schools' faculties and the physical and functional characteristics of the school plants. The scope of this section is limited to an examination of selected education system statistics and a brief inventory of educational resources.

The statistics in table 15 imply that the region's school systems are, for the most part, relatively well funded and staffed. Except in Rio Arriba County, school income per average daily student in the region exceeds the average for the state system. Five of the seven counties have student-teacher ratios less than or equal to the region and state ratio. Over 17 percent of the income to the state's public schools in 1968-69 was received by school systems within the seven counties; 15.80 percent of all teachers and 15.50 percent of all students are in the regional school system.

As noted in table 15, the source of operational funds varies considerably among counties. Los Alamos, a federally impacted area, receives over 44 percent of its operational fund from the federal government, but Mora County receives less than one percent from this source. Over 75 percent of the operational funds for non-federal impact areas are allocated to the school systems by the state.

In addition to the 20 public school districts, there are three state-operated secondary schools in the region, Northern New Mexico State School at El Rito, New Mexico School for the Deaf at Santa Fe, and the New Mexico State Boys School at Springer. The Northern New Mexico State School has been designated as an area vocational school to serve the needs of northern New Mexico. A new technical-vocational school is planned for Espanola and will be operated in cooperation with the El Rito school. The Boys School at Springer is a special correctional institution offering classroom training, vocational-technical education, and work-study assignments. There are also 24 private schools in the region. The majority of these are for grades one through six and are sponsored by various religious orders.

There are three institutions of higher education in the region, one state-operated and two private schools. The state-operated New Mexico Highlands University is located in Las Vegas and offers bachelor's and master's degrees in liberal arts and general education. The private schools are the College of Santa Fe and St. Johns' College of Santa Fe.

The staff of the North Central New Mexico Economic Development District lists lack of adequate financing, need for consolidation, and

Table 15. Selected public education statistics, by county, north-central New Mexico, 1968-1969

County	Number of School Districts	Actual Income	Number of Teachers	ADM[1]	Income per Member	Student-Teacher Ratio	Source of Operational Funds			
							Local	County	State	Federal
		dollars			dollars		percent	percent	percent	percent
Colfax	4	2,605,535	135	3,167	823	23:1	4.16	8.85	81.37	5.56
Los Alamos	1	4,354,816	231	4,834	901	21:1	2.81	4.18	48.14	44.87
Mora	2	1,378,200	69	1,466	940	21:1	3.02	3.10	93.22	.66
Rio Arriba	4	6,434,727	324	8,307	775	26:1	3.75	4.68	78.42	13.00
San Miguel	3	5,879,848	258	6,469	909	25:1	10.52	3.36	82.59	3.52
Santa Fe	2	11,087,431	504	12,115	915	24:1	6.20	7.73	78.99	7.08
Taos	4	4,693,390	225	5,460	860	24:1	4.46	6.21	85.40	3.93
Total	20	36,433,947	1,746	41,818	871	24:1	5.31	5.61	75.58	13.46
State	89	209,572,989	11,053	269,813	777	24:1	7.02	8.02	75.32	9.59

[1]ADM is average daily membership.

Source: Statistics, Public School Finance, New Mexico Department of Finance and Administration

lack of vocational training facilities as the major problems or deficiencies of the region's public school systems (9,p.202). Low level of industrial development and the extent of government ownership of land severely limit the tax base and, hence, local support of the public school systems. Distance and loss of community identity are often cited as the constraining factors in school consolidation.

Health Services

Table 16 is a partial picture of health personnel and services available to residents in north-central New Mexico. The American Medical Association recommends that there be one physician per 700 persons and one dentist per 2,000 persons in a given service area (10,p.59). A general standard of 4.5 hospital beds per 1,000 population is considered normal (9,p.180). Given these standards, there is an obvious shortage of physicians (M.D.'s) and dentists in the area. Santa Fe County is the only exception, having one physician per 605 population and one dentist per 2,096 population. In all probability, the medical personnel in Santa Fe treats persons who live in nearby population centers in Rio Arriba and Los Alamos counties, thus increasing availability of medical services to these people while possibly reducing the availability of services to Santa Fe residents.

The seven-county ratios reflect a particularly acute shortage of dentists relative to the stated standard. Mora County does not have a resident dentist. Rio Arriba, San Miguel, and Taos counties' ratios significantly exceed the stated standards.

Four of the seven counties approach the norm with respect to hospital beds per 1,000 population. Mora County does not have hospital facilities. Colfax and Los Alamos could possibly justify expanding their facilities.

The critical health service problem in this region may be the provision of these services to residents to remote villages and rural agricultural areas. Even though the region has a favorable ratio of hospital beds to 1,000 population, the occupancy rate is only 52.1 percent. Rural citizens, perhaps due to distances, may not take full advantage of existing medical services. There appears to be a need for more medical services and personnel in the region and a need to consider the health needs of citizens in remote areas.

Other Public Services

Secondary data on other public services such as utilities, sanitation, transportation, and police protection are scarce. However, the information in table 17, while supplementing the data on education and health services, also reflects the level of support for several locally provided public services. These data are presented in per capita terms in order to account for variances in county populations.

Per capita local expenditures for alternative purposes vary considerably among counties. In the predominantly rural counties, 89 to 91 percent of local expenditures per capita are for education. Colfax, Los Alamos, San Miguel, and Santa Fe counties have the larger urban areas, hence per capita expenditures for police protection, highways (including streets), sewerage, sanitation, fire protection, parks and recreation, and libraries tend to be higher than in the remaining counties, but with the exception of Los Alamos, educational expenditures per capita are lower. In Los Alamos County, the direct general expenditure per capita

Table 16. Medical personnel and hospital beds, north-central New Mexico, by county, 1968

County	M.D.'s	D.O.'s	Chiropractors	Dentists	Hospital Beds	M.D.'s to Population	Osteopaths to Population	Chiropractors to Population	Dentists to Population	Hospital Beds per 1,000
Colfax	11	--	3	5	104	1/1,127	--	1/4,133	1/2,480	8.39
Los Alamos	14	--	1	6	98	1/1,164	--	1/16,300	1/2,717	6.01
Mora	2	--	0	0	0	1/2,600	--	--	--	--
Rio Arriba	15	5	2	3	109	1/1,587	1/4,760	1/11,900	1/7,933	4.58
San Miguel	23	2	3	4	97	1/965	1/11,100	1/7,400	1/5,550	4.37
Santa Fe	90	4	7	26	215	1/605	1/10,900	1/7,786	1/2,096	3.94
Taos	7	1	0	3	30	1/2,457	1/17,200	--	1/5,733	1.74
Total	162	12	16	47	653	1/936	1/12,633	1/9,475	1/3,226	4.31
State	930	124	--	--	4,681	1/1,097	1/8,227	--	--	4.59

Sources: Hospital and Facilities Bulletin, NCMDD Overall Economic Development Program, Phase 2, New Mexico Handbook

Table 17. Per capita expenditures by local governments on selected public services, by county, north-central New Mexico, 1966-1967

Expenditures	County						
	Colfax	Los Alamos	Mora	Rio Arriba	San Miguel	Santa Fe	Taos
Highways							
Dollars	18.20	14.29	10.07	5.30	8.15	26.11	3.70
Percent	7.7	3.5	4.6	2.2	3.7	12.0	1.3
Public Welfare							
Dollars	.02	--	.01	.01	.06	.02	.01
Percent	0.0	--	0.0	0.0	0.0	0.0	0.0
Health							
Dollars	1.31	1.00	.28	.48	.62	4.64	.21
Percent	.6	.2	.1	.2	.3	2.1	.1
Police Protection							
Dollars	8.73	7.38	1.72	2.10	7.56	12.23	2.84
Percent	3.7	1.8	.8	.9	3.4	5.6	1.0
Fire Protection							
Dollars	3.72	--	.63	.71	1.59	5.38	.76
Percent	1.6	--	.3	.3	.7	2.5	.3
Sewerage							
Dollars	3.14	6.24	--	2.46	.63	2.48	--
Percent	1.3	1.5	--	1.0	.3	1.1	--
Sanitation Other Than Sewerage							
Dollars	3.84	8.77	--	.90	2.78	4.11	.38
Percent	1.6	2.1	--	.4	1.3	1.9	.1
Parks and Recreation							
Dollars	2.57	15.06	.42	.74	1.54	5.28	.02
Percent	1.1	3.7	.2	.3	.7	2.4	0.0
Natural Resources							
Dollars	4.83	2.42	.09	.48	.10	.01	1.05
Percent	2.1	.6	0.0	.2	.1	0.0	.4
Housing and Urban Renewal							
Dollars	--	--	--	--	--	2.67	--
Percent	--	--	--	--	--	1.2	--
Water Supply							
Dollars	32.57	5.82	--	4.30	.18	--	2.79
Percent	13.9	1.4	--	1.8	.1	--	1.0
Education							
Dollars	162.24	308.95	197.85	220.14	184.09	127.27	258.47
Percent	69.0	74.9	89.8	89.8	83.2	58.4	91.0
Libraries							
Dollars	1.01	7.15	.09	.19	.62	2.28	.19
Percent	.43	1.73	.04	.08	.28	1.05	.07
Direct General Expenditures	235.05	412.65	220.29	245.24	221.22	217.87	284.00

Source: 1967 Census of Governments, Bureau of the Census

exceeds that of the highest county, Taos, by $128.65. In addition to higher educational expenditures per capita, Los Alamos County spends more per capita on sewage disposal, sanitation, parks and recreation, and libraries than any of the other counties.

Primary and secondary highways in the area are depicted in figure 6. Three of the four primary highways run north to south through the region. The traffic flow over these roads is depicted in figure 7. These figures indicate that the highway transportation system links the region primarily to southern Colorado and to the Albuquerque area. Access to the west is restricted to secondary highways or through Albuquerque. In addition to federal and state highway systems, each county maintains an average of 492 miles of other roads. A commercial airport is located at Santa Fe; other airfields exist in Las Vegas, Springer, Raton, Taos, and Espanola. The only operating rail transportation is the Atchison, Topeka and Santa Fe line from Raton through Las Vegas into Albuquerque.

Accessibility appears to be a problem, but rail and air transportation facilities normally follow the

Fig. 6. Major highways, north-central New Mexico

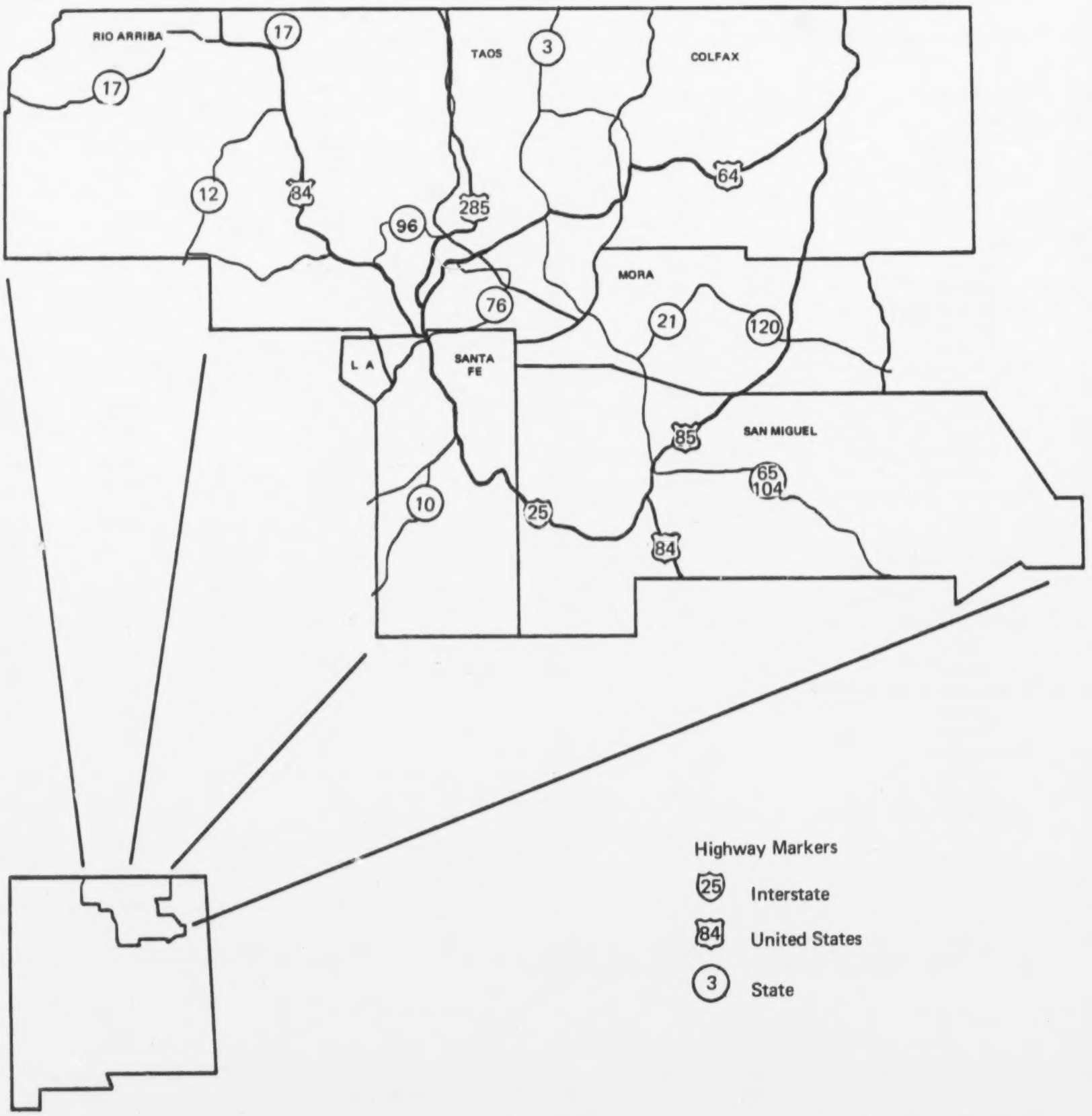
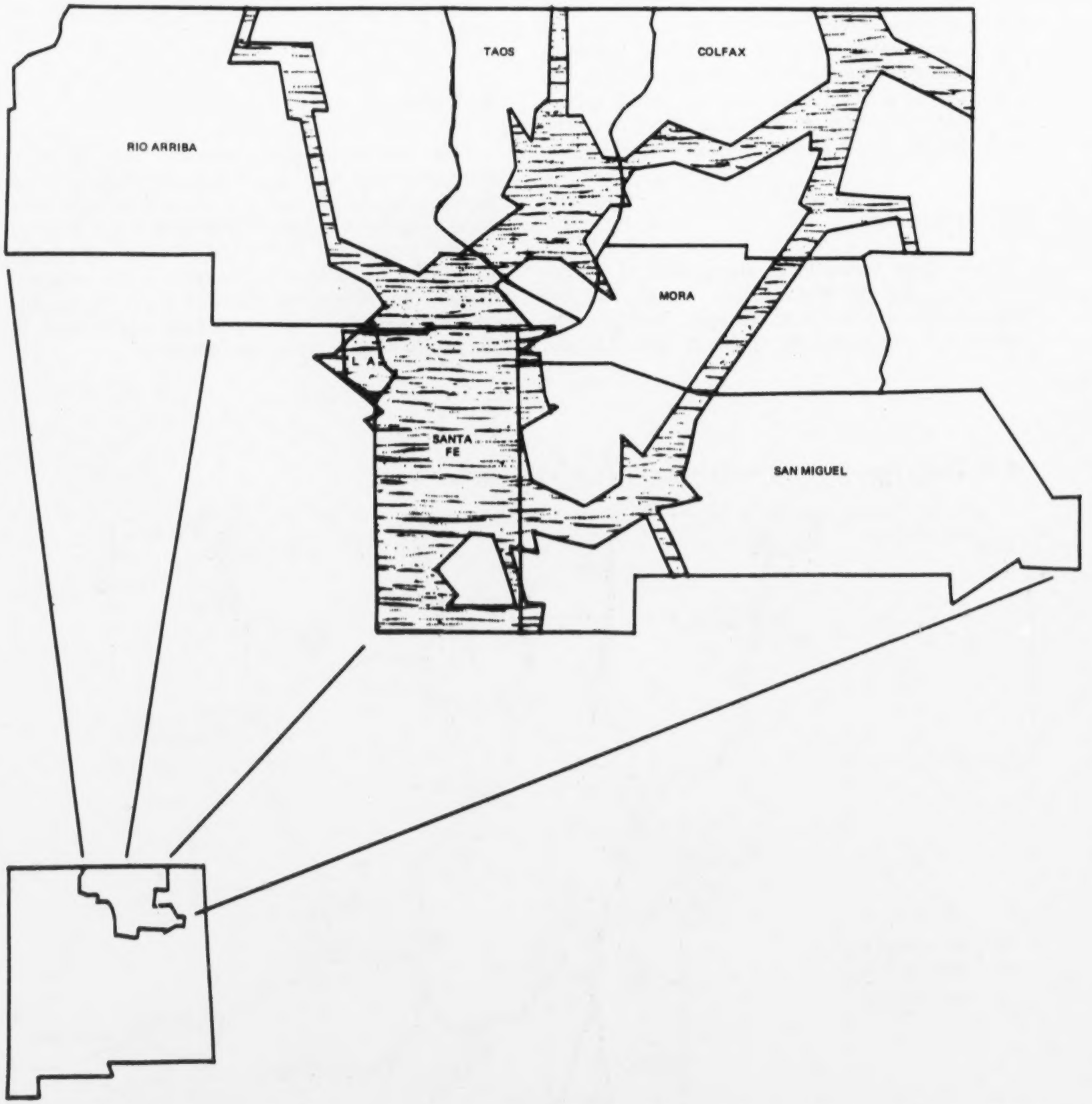


Fig. 7. Traffic flow volume, north-central New Mexico



Source: Abstracted from North Central New Mexico Economic Development District, *Overall Economic Development Program—Phase 2*, Draft, Santa Fe, New Mexico, April, 1969, p. 154

determination of need and profitableness. As the region develops, these services may be expanded. The cost of road construction in the rugged terrain bordering the northern Rio Grande Valley and the limited population served by proposed highways have restricted development of these facilities. The expansion of primary road systems would reduce the distance friction which adversely affects the public service and economic linkages in the region.

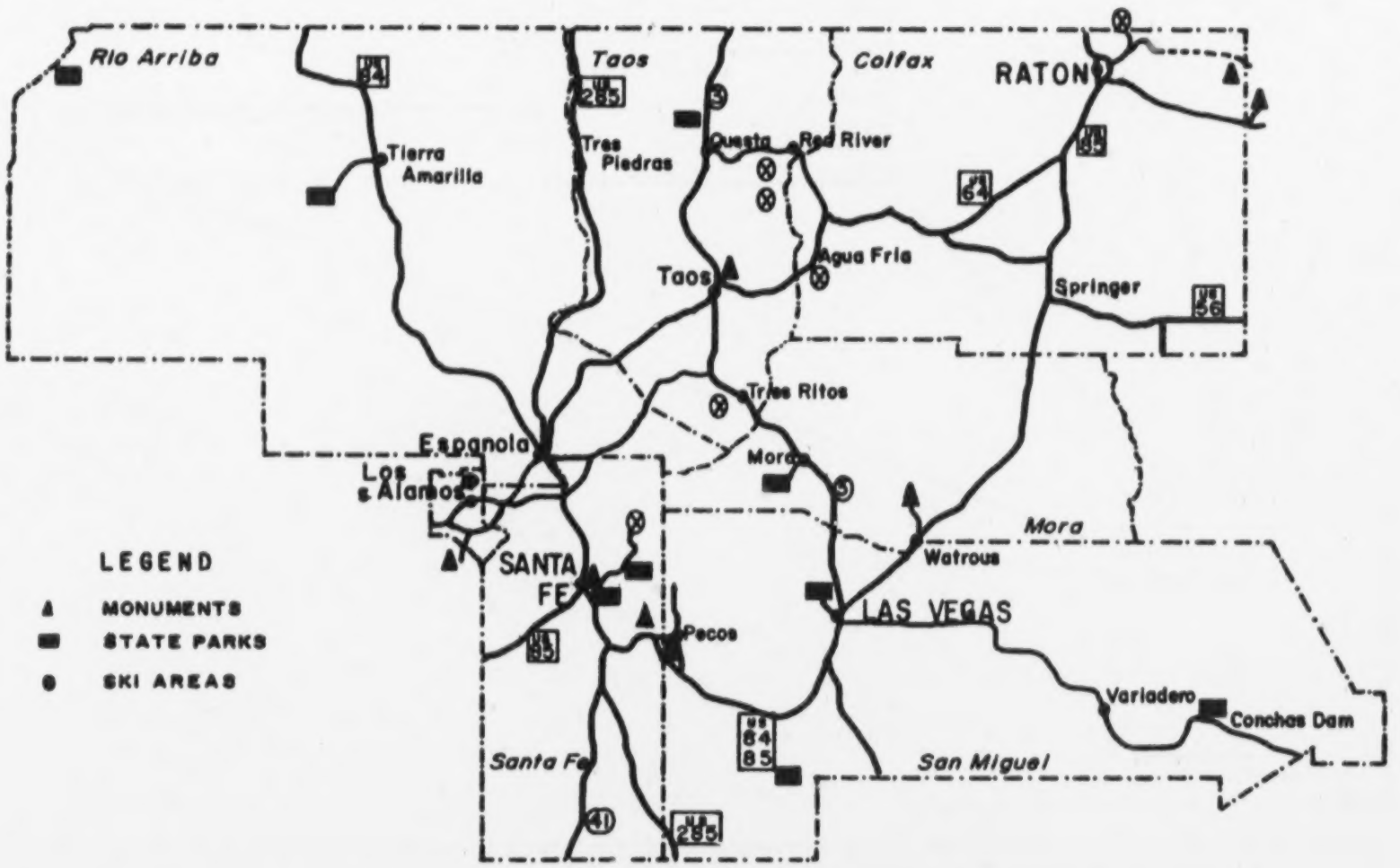
Communications

Three daily newspapers are published in the seven counties—the Raton Daily Range, the Las Vegas Optic, and the New Mexican. Weekly newspapers are published in Springer, Los Alamos, Dulce, Espanola, Santa Fe, and Taos. The region has nine radio stations, but must import all television programming either from Albuquerque or southern Colorado.

Recreation

This region is well endowed with outdoor recreation potential. There are eight state and national monuments, six ski areas, and nine state parks, plus several private recreation areas. With its natural endowments, the region serves as a playground for those from other areas in the state and nation. This recreation potential is a very valuable resource which should contribute much more to the region's economy in the future.

Fig. 8. Study region—monuments, state parks, and ski areas



Source: North Central New Mexico Economic Development District, *Overall Economic Development Program—Phase 1*, Santa Fe, New Mexico, May 24, 1968

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This publication is one of the Agricultural Experiment Station's research report series, which describes results of experimental work in progress. Such research, financed by both state and federal funds, is intended to improve the efficiency of New Mexico agriculture and thereby augment the economy of the state.